

FROM THE DESK OF
KAEDE IIZUKA

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Kaede Iizuka
Concern of Alzheimer's disease

Dear Chancellor of the Massachusetts Institute of Technology,

As the world is now concerned that the statistic show that nearly 5.4 million American citizens currently carries an alzheimer's disease, also known as AD as an acronym. Statistic shows that five to ten percent of the population who are aged sixty-five or older will develop AD. Whereas statistic also evident that it is the number sixth leading cause for death in the United States, where it is the only cause of death without having any prevention or to cure. AD is significant and worth exploring as shown in the statistic above and it has a huge influence in the everyday life.

Alzheimer's disease is a serious brain disease, the the brain tissues starts to shrink and the neurons are covered with fibers therefore, unable to function right, leading one with AD to death. Leading the patients to having difficulty to store short term memories because the hippocampus does not function in the right way. As developing AD, the episodic memory is affected the most. Episodic memory stores information of events and personal experience that happens in a certain time or place. AD also affects semantic memory, where it stores information about the world, concepts and languages. Unable to function our episodic and semantic memory correct, patients faces symptoms such as; having difficulty speaking, comprehending languages, unable to focus, hallucination, delusions, and loss of appetite. Patients with AD shows an relevant connection with the brain. Researchers evident that patient with AD shows an decrease of activation in the medial temporal lobe, where the episodic memory is stored and it is the first part of the brain that shows a pathological change. As the stages progress, the hippocampus, then the parietal brains and cerebral cortex are effected. In the final stage, patients usually face death with increasing the number of the nerve cells and patients starts to wander, agitation, unable to control muscle movements and loss of the ability of speaking. As the stages worsens, these changes in the brain occurs because of the loss of the brain cells and neurons that are related with the production of acetylcholine. Acetylcholine is a neurotransmitter that deals with motor motions and memory. Function of this neurotransmitter is that it controls the muscle and are responsible for our focus, where lack of acetylcholine leads one to get alzheimer's disease because it does not contain enough brain cells where leading to the final stage of AD, loss of controlling muscle movement.

Profferer Tsai, researches the area of psychiatric disorders and neurodegenerative disease. Where continuing the research, decided to explore more about alzheimer's disease. Her knowledge included that patients have higher postmortem brain tissues compared to the patients who does not carry AD. Also, the beta-amyloid peptides, a neurotoxic part that is found in AD patients increases the level of p25. Using her knowledge, she conducted a study using mouse and overexpress the p25 into the forebrain. After six week with the overexpress of p25, the mouse had a neuronal loss, increase of amyloid levels and tau-protein to be tangled inside of the brains of the patients. Tsai has concluded that even if animals has poor memory skills, using the environment it is possible to regain long-lost

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memory. Animals that were involved in this research was able to regain its long-lost memory from the use of toys, treadmills. Tsai's research provided us a new method of treatment and to expand the method so that we can improve the cognitive process of patients who carry alzheimer's disease.

As to conclude, as a student of MIT, it is necessary and worth continuing this research. As stated above, alzheimer's disease is a serious brain disease that it is the number sixth-leading cause for death in the United States of America. Where one out of eighth elder American citizens carry alzheimer's disease and 5.4 million American citizens now suffer their lives because of carrying AD. As this disease is very terrifying, where it can lead to death, we must keep on researching until we have a way to prevent this disease and to find one method to cure this disease.

Sincerely yours,

Kaede Iizuka